Title :
High accuracy dynamic aperture tracking using the ray-tracing code Zgoubi

Abstract :
Various recent exercices of 4D dynamic aperture tracking in large rings are reviewed : LHC in presence of arc dipole and quadrupole fringe fields ; LHC in presence of b10 non-linearity and fringe fields in the low-beta quadrupoles ; Fermilab recycler ring involving combined function focusing ; Cern and Fermilab versions of a muon storage ring involving families of short, large aperture, strong quadrupoles ; the Fermilab proton driver, a 6D tracking project including synchrotron motion. The Zgoubi numerical integrator is based on a symplectic method, a brief description is given. Comparisons with well known other codes have been performed, that are
addressed as well.

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